AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-9. (canceled)

10. (currently amended) ~~Device as claimed in claim 1, characterised in that~~ An image analysing focusing device for an infrared optical apparatus (10) comprising:

a controllable optical convergence element (20);

an image detector (30) arranged so as to receive an image of an object projected by the optical convergence element; and

a processor arranged so as to receive signals from the image detector and to generate control signals to control the optical convergence element (20) to focus the image of the object onto the image detector (30);

wherein the processor comprises a search element constructed and arranged so as to analyze the image on the image detector (30) to select at least one image window in the image in connection with which a focusing operation is to be performed in accordance with predetermined conditions; and

wherein the processor further comprises a focusing element (150) in the processing means (40) constructed and arranged so as to control the optical convergence element so as

to focus a portion of the image within the at least one image window using an iterative process;

wherein the iterative process comprises the steps of: performing a coarse focusing using only a first range of spatial frequency components of the image; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range;

wherein the predetermined conditions comprise estimation of a distance from the apparatus (10) to a viewed object based on information on temperature and/or position of the optical convergence means (20).

11. (original) Device as claimed in claim 10, characterised in that the predetermined conditions comprise estimation of a distance from the apparatus (10) to a viewed object based on information on temperature and/or position of the optical convergence means (20) comprising at least one of the options:

presenting estimated distance to the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated distance and inaccuracy;

presenting data only when the search operation means (140) has obtained an acceptable focus position.

12. (original) Device as claimed in claim 10, characterised in that an estimation of the temperature of a viewed object is done based on information on an estimation of distance from the apparatus (10) to a viewed object provided by the calibration device (110), optics temperature and/or position of the optical convergence means (20).

13. (original) Device as claimed in claim 12, characterised in that an estimation of the temperature of a viewed object is done based on information on a distance from the apparatus (10) to a viewed object, optics temperature focus position of the optical convergence means (20) comprising at least one of the options:

presenting estimated temperature of the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated temperature and inaccuracy;

presenting data only when the search operation means (140) has obtained an acceptable focus position.

14-26. canceled

27. (currently amended) ~~Method as claimed claim 24, characterised in that~~ An image analysing focusing method for an infrared optical apparatus (10) comprising controllable optical convergence element (20), an image detector (30) arranged so as to receive an image of an object projected by the optical convergence element (20), a processor arranged so as to receive

signals from the image detector and to generate control signals to control the optical convergence element (20) to focus the image of the object onto the image detector (30), the focusing method comprising the steps of:

analyzing the image on the image detector (30) to find at least one image window in the image for which a focusing is to be done in accordance with predetermined conditions; and

providing a focusing on the at least one image window based on providing as distinct differences between individual detecting positions (pixels) within the image window as possible using an iterative process comprising the steps of:

performing a coarse focusing using only a first range of spatial frequency components of the image; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range;

wherein the predetermined conditions of the focusing comprise use of a focus function of the form $FMF(z)=\frac{1}{N}\sum(K\otimes I_z-m)^2$, where K is an operator, N a factor of normalisation and m is a variable.

28. (original) Method as claimed in claim 27, characterised in that the operator values of the focus function comprise: K= [1 1 1], K=[1-1], K= [10-1] and K=[1].

29. (previously presented) Method as claimed in claim 28, characterised in that use of the operator values of the focus function is made with a variation depending on individual requirements of each system, by applying the operator functions in more than one direction in the image.

30. (canceled)

31. (canceled)

32. (currently amended) The image analyzing focusing device of claim [[31]] 37, wherein the variable iterative process is selected based on spatial frequencies of the image.

33-34. (canceled)

35. (currently amended) The device of claim [[5]] 38, wherein the predetermined condition underlying the selection of the at least one image window is based on identification of a portion of the image representing a highest temperature.

36. (currently amended) The device of claim [[5]] 38, wherein the predetermined condition underlying the selection of the at least one image window is based on identification of a portion of the image representing a lowest temperature.

37. (new) A focusing device for an infrared optical apparatus comprising:

a controllable optical convergence element;

an image detector arranged so as to receive an image of an object projected by the optical convergence element and to generate an image signal based on the received image; and

a processor arranged so as to receive the image signal and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector;

wherein the processor is constructed and arranged to generate the control signals based on selected components of said image signal from the image detector that represent at least one image window in the image using an iterative process;

wherein the iterative process comprises the steps of:

performing a coarse focusing using only a first range of spatial frequency components of the image using a "hill-climbing" technique; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range, the fine focusing step using a "curve-fitting" technique comprising adapting a mathematical function and calculating a maximum value of said function.

38. (new) The device of claim 37, wherein the processor performs the iterative process on at least one image window in the image, the image window representing less than an entirety of the overall image.

39. (new) The device of claim 38, further comprising a sensor constructed and arranged so as to be able to monitor at

least one of differences in temperature and changes in temperature within the image window.

40. (new) The device of claim 37, further comprising a sensor with a radiometric calibration device.

41. (new) The device of claim 40, wherein the device is structured and arranged to use the sensor and the radiometric calibration device to monitor at least one of differences in temperature and changes in temperature within the image window.

42. (new) The device of claim 37, wherein the device is constructed and arranged to perform of the relation between at least two of the following parameters:

distance from the device to a viewed object;

temperature of the optical convergence element; and

focus position of the optical convergence element.

43. (new) The device of claim 42, wherein the device is constructed and arranged to estimate a distance from the device to the viewed object based on information on at least one of temperature and position of the optical convergence element.

44. (new) The device of claim 43, wherein the device is constructed and arranged to estimate the distance from the device to the viewed object based on information on at least one of temperature and position of the optical convergence element, the device further providing at least one of the options:

presenting estimated distance to the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated distance and inaccuracy;

presenting data only when the device has obtained an acceptable focus position.

45. (new) The device of claim 43, wherein the device produces an estimation of the temperature of the viewed object based on information on an estimation of distance from the device to the viewed object provided by at least one of the calibration device, optics temperature, and position of the optical convergence element.

46. (new) The device of claim 45, wherein the device produces an estimation of the temperature of the viewed object based on information on an estimation of distance from the device to the viewed object provided by at least one of the calibration device, optics temperature, and position of the optical convergence element, the device further providing at least one of the options:

presenting estimated temperature of the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated temperature and inaccuracy;

presenting data only when the device has obtained an acceptable focus position.

47. (new) The device of claim 38, wherein the device identifies the image window by further comprising a movement

detection device that enables focusing on moving objects, whereby the focus window is movable across the image and follows the moving object in the window during the focusing.

48. (new) The device of claim 38, wherein the device identifies the image window by correlating a geometrical object in the image with a pre-defined geometrical object prior to focusing on the particular geometrical object of the viewed image.

49. (new) The device of claim 48, wherein the geometrical objects are represented as 2-dimensional electronic images supplied via an information transmitting means.

50. (new) The device of claim 37, wherein the device is constructed and arranged to perform a calculation of possible ranges for the focus position at a certain temperature, so as to omit image analysis in impossible intervals.

51. (new) The device of claim 37, wherein the device is constructed and arranged to adjust the focus position to infinity when no object to focus on can be found within the viewed image.

52. (new) The device of claim 37, wherein the device comprises a pan-tilt type of equipment where the processor controls a repeated sequence of movements between pre-defined objects or focus windows within the viewed image.

53. (new) The device of claim 52, wherein the pan-tilt equipment in the processor includes a register of preceding focus data used for adjusting the focus position or a nearby focus

position already during the moving from one viewed area to the next area to be viewed.

54. (new) The device of claim 37, further comprising an integrated zooming device.

55. (new) The device of claim 37, further comprising an integrated position determining device, whereby the processor calculates and presents positions of viewed objects relative to positional data from the position determining device.

56. (new) A focusing device for an infrared optical apparatus comprising:

a controllable optical convergence element;

an image detector arranged so as to receive an image of an object projected by the optical convergence element and to generate an image signal based on the received image;

radiometric instrumentation connected to receive as an input the image signal, the radiometric instrumentation being constructed and arranged to generate a radiometric output signal; and

a processor arranged so as to receive the radiometric output signal and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector;

wherein the processor is constructed and arranged to generate the control signals based on the radiometric output signal that represents at least one image window in the image,

the image window representing less than an entirety of the overall image; and

wherein the focusing device is constructed so as to select the image window used for focusing based on thermal properties of objects represented in the image as determined by the radiometric instrumentation.

57. (new) The focusing device of claim 56, wherein the selected image window used for focusing is that which represents a highest object temperature in the overall image.

58. (new) The focusing device of claim 56, wherein the selected image window used for focusing is that which represents a lowest object temperature in the overall image.

59. (new) The focusing device of claim 56, further comprising a calibration device, with the radiometric output signal passing through the calibration device before being received by the processor.

60. (new) The focusing device of claim 59, wherein the focusing device is constructed to select the image window used for focusing that represents an object temperature of a predetermined value.

61. (new) The focusing device of claim 59, further comprising a temperature measuring device, an output of which is received as an input by the calibration device.

62. (new) An image analysing focusing method for an infrared optical apparatus comprising steps of:

providing a controllable optical convergence element;

providing an image detector arranged so as to receive an image of an object projected by the optical convergence element and to generate an image signal based on the received image; and

providing a processor arranged so as to receive the image signal and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector;

performing analysis of the image on the image detector with the processor to find at least one image window of the overall image that is to be used for the focusing function; and

focusing the at least one image window of the overall image based on providing as distinct differences between individual pixels within the image window as possible using an iterative process comprising the steps of:

performing a coarse focusing using only a first range of spatial frequency components of the image using a "hill-climbing" technique; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range, the fine focusing step using a "curve-fitting" technique comprising adapting a mathematical function and calculating a maximum value of said function.